Train, Educate, and Accelerate Mastery of Stem cell research (TEAMS) program

Grant Award Details

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Grant Type: SPARK

Grant Number: EDUC3-13117

Project Objective: This SPARK program provides 8-week summer research internships for high school students in regenerative medicine laboratories at City of Hope. Students, who will be recruited from diverse backgrounds and communities underrepresented in STEM, will receive mentoring, participate in workshops and seminars as well as patient engagement activites. At the conclusion of their eight week internships, students will present their research in a culminating SPARK conference.

Investigator:

Name:	David Ann
Institution:	City of Hope, Beckman Research Institute
Type:	PI

Award Value: $508,750

Status: Pre-Active

Grant Application Details

Application Title: Train, Educate, and Accelerate Mastery of Stem cell research (TEAMS) program

Public Abstract: It is well documented that trainees from groups underrepresented in the STEM fields leave the research workforce pipeline, with many progressively losing interest in research-intensive careers. To overcome this, we will leverage our institution's long-standing success in education and training toward engaging underrepresented individuals in the field of regenerative medicine. The Train, Educate, and Accelerate Mastery of Stem cell research (TEAMS) program's primary goal is to develop and maintain a robust pipeline of students excited about regenerative medicine research to become the next generation of researchers. We will inspire, educate, and motivate qualified candidates from southern California's diverse populations, enabling them to master critical regenerative medicine knowledge and skills using a multidisciplinary approach. Under the umbrella of a long-standing, renowned summer academy, the 10-week TEAMS program will select 10 high school students (over the age of 16) to participate in a 10-week program that places trainees in 10 (of 23 potential) laboratories focused on regenerative medicine research. Our goal is for TEAMS to become a focal point for mentoring and training a diverse pipeline of regenerative medicine researchers to address disparities in its application. Strong mentorship, especially through formalized programs, can enable trainees to navigate a research career pathway and strengthen their commitment to a regenerative medicine career as early as possible.

Our institution is home to a diverse group of researchers who are exploring a broad array of regenerative medicine topics, and actively promotes diversity, equity, and inclusion in our workforce. Our mentors have historically embraced the opportunity to host CIRM-SPARK trainees, ensuring a superlative first-hand experience in pursuing a hypothesis-driven, regenerative medicine-focused research project. Early exposure to biomedical research allows trainees to fully appreciate all aspects of the scientific process, including developing a hypothesis, designing experiments, performing experiments, gathering and analyzing data, and drawing conclusions. By coupling this with clinical interactions, training in cutting-edge core facilities, participation in an established personal and professional development program, and community outreach opportunities, we will ensure that each TEAMS trainee is inspired by the untapped potential of biomedical research. Together, these experiences will provide a broad educational foundation as well as stimulate an interest in pursuing regenerative medicine-based research in the future.

We have a robust history of supporting training of this kind, exemplified by our summer academy, a recently concluded CIRM-SPARK program, and other federally funded programs to engage students in the research pipeline. Many alumni of these programs (61.5%) currently remain in a science-based career pipeline including biomedical research and medicine.

Statement of Benefit to California:	California leads the world in regenerative medicine discovery. Despite this significant accomplishment, our regenerative medicine treatments have been minimally evaluated in people of color. Most clinical trial participants are non-Hispanic European-Americans. Among researchers, disparities in training occur throughout the entire regenerative medicine research pipeline. Latinx/Hispanic- or African-Americans account for only a small number of research scientists and <2% of physicians conducting clinical trials. The population of southern California represents a melting pot that is culturally and racially diverse. A 2019 population estimate reported Los Angeles County to have a population of 10,039,107, which included 26% white, 48.6% Hispanic, 15% Asian, 9% African American, and 2% American Indian/Alaska Native/Pacific Islander, with similar demographics in neighboring counties. Located in southern California, our proposed Train, Educate, and Accelerate Mastery of Stem cell research (TEAMS) program recognizes our opportunity to enhance the scientific workforce by reducing the barriers to success for groups of people who face unique challenges in entering the regenerative medicine field. The benefits of diversifying the workforce include promoting innovation and global competitiveness and increasing the likelihood that biomedical advances will benefit our diverse population, including medically underserved groups. To promote the development of a diverse workforce that reflects our state and local communities, we will offer local high school students the chance to engage in science as a hands-on experience rather than as a lecture and textbook exercise. The TEAMS program will leverage our majority-minority community and our institution's diversity training programs and world-renowned regenerative medicine discovery resources. Trainees will gain a general understanding of a range of biomedical topics and expand their personal and professional development under the guidance of our dedicated faculty and staff. Carrying out experiments in a model system is not limited to simply applying a protocol to arrive at a particular endpoint, it is also necessary to understand both the ethical implications of the work and the potential impact it may have on patients. Thus, TEAMS trainees will also explore bioethical issues surrounding regenerative medicine, including representation and disparities. Our institution is nationally recognized for our clinical application of regenerative medicine in cancer and diabetes, and trainees will also interact with our clinicians and patient advocates working in the areas of bone marrow transplant, islet cell transplantation, and CAR T cell therapy. This opportunity will provide trainees with a unique perspective of the very real impact that regenerative medicine-based therapies have on the lives of patients. Our goal is to build a diverse regenerative medicine pipeline and address disparities in our community.